

Method to Enrich for Cells Transduced with Chimeric Antigen Receptors

Tech ID: 25777 / UC Case 2016-255-0

SUMMARY

Researchers at UCLA have developed a method to expand chimeric antigen receptor-transduced T cells for use in immunotherapies.

BACKGROUND

Chimeric Antigen Receptors (CAR) T cells are promising therapeutics for the treatment of cancer and are also being considered for the treatment of infectious diseases. However, adoptive transfer and clinical manufacturing of CAR T cells is a time-consuming, complex, and labor-intensive process. A key issue with CAR-engineered T cell therapies (and cell therapies, in general) is the low transduction efficiency of T cells with CAR-expressing constructs. For instance, peripheral blood T cells that are often the target of CAR gene therapy typically have transduction efficiencies less than 50%, often 10-20%. As a result, production of sufficient cell numbers for therapy requires an increase in the scale of patient cell collection as well as more extensive ex vivo T-cell selection and expansion. This contributes to CAR T cell therapies high manufacturing costs. Thus, there is a clear need for technologies that can optimize the transduction efficiency and manufacturing of CAR T cells.

INNOVATION

Dr. Otto Yang and colleagues in the Department of Microbiology, Immunology & Molecular Genetics at UCLA have developed a method of specifically expanding CAR-transduced T cells, without inducing expansion of the total T cell population. This method was developed to stimulate proliferation of the CAR-transduced T cells but not the non-transduced T cells, leading to selective expansion of CAR-transduced T cells and therefore rapid enrichment.

APPLICATIONS

- ▶ CAR T cell therapies

ADVANTAGES

- ▶ Selective stimulation of CAR-transduced T cells but not non-transduced T cells
- ▶ Selective expansion of CAR-transduced T cells
- ▶ Expansion of selectively transduced cells to get the same number of transduced cells without expanding non-transduced cells
- ▶ Rapid enrichment of CAR-transduced T cells

STATE OF DEVELOPMENT

Dr. Otto Yang and colleagues have shown proof-of-concept experiments demonstrating rapid enrichment of CAR-transduced cells despite a relatively low starting transduction rate.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,034,933	06/15/2021	2016-255

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INVENTORS

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OTHER INFORMATION

KEYWORDS

Chimeric Antigen Receptors, artificial T cell receptors, gene therapy, TCR gene therapies, oncology, cancer, CAR, blood

CATEGORIZED AS

- ▶ **Medical**
 - ▶ Disease: Cancer
 - ▶ Disease: Infectious Diseases
 - ▶ Therapeutics

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